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EXPLANATION OF PLATE XLII.—Fig. 1. Plant natural size, showing only the upper portion. Fig. 2. A portion of a leaf, showing two fertile nodes, and fertile rays from the lower node, magnified 25 diameters. Fig. 3. Another leaf, showing two twin sporangia, each pair from one cell (divided horizontally). Figs. 4 and 5. Tips of leaves, magnified 200 diameters. Fig. 6. The elongated oblique coronula. Fig. 7. Top of an old sporangium after the coronula has become detached. Fig. 8. The nucleus magnified 50 diameters.

New Species of Fungi.

By J. B. ELLIS and BENJAMIN M. EVERHART.

SPHÆRELLA (LÆSTADIA) POLYSTIGMA.—Perithecia large, scattered thickly over the lower surface of the leaf, covered by the blackened cuticle, subhemispherical, collapsing; ostiolum papilliform, at length perforated; asci $35-40 \times 8 \mu$, oblong, sessile; sporidia biseriate, ovate-elliptical, continuous, subhyaline, $10-12 \times 3-4 \mu$, in shape very much like apple-seeds.

Allied to *S. carpineæ*. On fallen oak-leaves. Ohio. Kellermann.

SPHÆRELLA PANDURATA.—Hypophyllous; perithecia globose ($.17-.25^{\text{mm}}$), buried in the substance of the leaf, and, except the slightly projecting, rounded apex, covered by the blackened cuticle; ostiolum papilliform, minute; asci oblong-cylindrical, $50 \times 7 \mu$; sporidia biseriate, fusiform, 4-nucleate, yellowish, constricted in the middle and bulging out each side of the constriction, $10-12 \times 3 \mu$.

On fallen oak-leaves. Plainfield, N. J., September, 1883. G. F. Meschutt.

MELANCONIS EVERHARTII, Ellis.—Perithecia globose ($.25^{\text{mm}}$) in compact clusters of 4-18, just under the outer layer of the inner bark, which is raised into little tubercles about 1^{mm} in diameter, from which arise, in a compact fascicle, piercing the epidermis, the short-cylindrical, obtuse ostiola, their tips perforated with a rather large circular opening; asci clavate-cylindrical, $114-120 \times 19 \mu$; paraphyses stout, sparingly septate and granular; sporidia biseriate, oblong-elliptical, uniseptate, nearly hyaline $34-38 \times 11 \mu$.

On a fallen sapling of maple. West Chester, Pa., June, 1882.

The ostiola throw off the epidermis, and the perithecia themselves soon after fall out, leaving light colored, circular spots which mark the place of their attachment. The fruit is almost exactly that of *M. Modonia*, Tul., but the more elongated ostiola, the smaller perithecia and deciduous habit distinguish it.

MELANCONIS (MELANCONIELLA) MESCHUTTH.—Perithecia $10-20$ ($.25 \times .33^{\text{mm}}$), circinating in a thin, lenticular, black, orbicular or elliptical stroma seated on the surface of the inner bark; ostiola short cylindrical, united in a dirty brown disk bursting through transverse cracks in the epidermis, their tips, in well developed specimens, distinctly 4-cleft; asci (spore-bearing part) about $75 \times 10 \mu$; sporidia biseriate, elliptical, very slightly curved, uniseptate and slightly constricted, subhyaline at first, with a faint, transparent, horn-shaped appendage at each end, but these soon becoming absorbed and the spore becoming brown, $14-16 \times 6-8 \mu$ (mostly $15-16 \times 6 \mu$.)

On dead limbs of birch. Plainfield, N. J., June, 1883. George F. Meschutt. *Gelatinosporium betulinum*, Pk., occurs on the same branches, and where the epidermis is weaker, the appearance of the

stroma is different, it being more prominent, and the epidermis being irregularly lacinate-cleft around it. The perithecia soon collapse, so that, on stripping off the epidermis, their position is indicated by little circular concavities around the margin of the stroma. This is closely allied to *M. Decoraënsis*, Ell., but differs in its smaller perithecia and narrower *appendiculate* sporidia.

MELANCONIS (MELANCONIELLA) BIANсата.—Perithecia circinating in a stroma scarcely different from that of the preceding species, globose, .75^{mm}. in diameter, soon collapsing, 6–10, their short, cylindrical ostiola with 4-angled or imperfectly cleft tips, united in a dirty brown, narrowly elliptical or suborbicular disk, which slightly rises and bursts through the epidermis by which it is closely girt; asci 190–200x300 μ , evanescent, (8-spored?); sporidia oblong-elliptical, uniseptate, soon becoming brown, and generally with a short, stout, tuberculiform projection at each end, length, without appendage, 35–45x15–19 μ .

Found on the same limbs with the preceding species.

VALSA FAGICOLA.—Stroma formed of the scarcely altered substance of the bark; perithecia circinating, 10–15, subglobose, membranaceous, collapsing (.33^{mm}), abruptly contracted into a slender, cylindrical neck about .33^{mm}. long, the necks all converging and piercing the epidermis in a small, papilliform, black disk; tips obtuse, with a rather broad opening; asci (spore-bearing part) 18–20x3 μ , at first with a convex, hyaline tip which soon disappears, leaving them truncate above; (paraphyses?); sporidia biserial, cylindrical, hyaline, curved, 2.5–3.5x.5–.75 μ .

The asci are arranged in a racemose manner, like those of *Valsa ciliatula*, Fr., of which this might perhaps be considered a small form.

On dead limbs of *Fagus ferruginea*. West Chester, Pa., June, 1882. E. H. J. and G.

Pinus Banksiana.—The *Gardener's Monthly* for 1873 gives an account of the large size of *Pinus Banksiana* at Marquette and other places in the Lake Superior region. Coming across the continent from the Pacific coast over the Northern Pacific R. R., the first tree of the distinctively Atlantic group to meet us is *Pinus Banksiana*. At Motley, in Morrison County, Minnesota, the trees seemed to be about 40 feet high, and some were 4 feet in circumference. Soon after meeting these we came to *Pinus rigida*, black spruce, white pine and tamarack. The forests—if scattered groups of trees might be so called—had a comparatively young look, and seemed to tell of a natural march of forest growth westward.

THOS. MEEHAN.

Fern Notes.—Last spring I examined with considerable care the development of the prothallia of *Struthiopteris Germanica*, and found that they were very distinctly dioecious. In about five weeks from the time the spores were started the first antheridia were mature; but it was more than six weeks *later* before mature archegonia were noticed, and these were on different prothallia. The